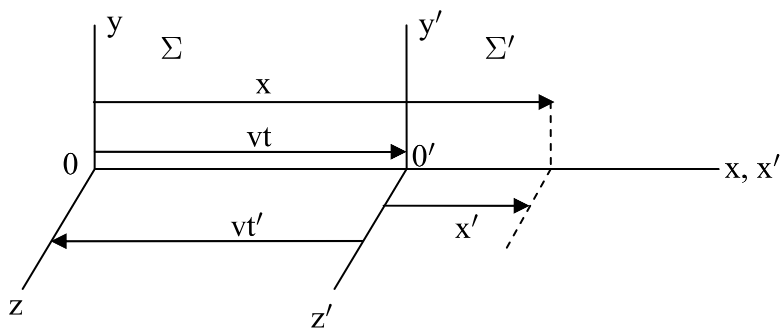

As I understand it, I can conceive of all the distances shown as lengths of rods. Let's say that O has laid off a rod of length x to the position of an event in his frame that occurs at x at time t and then laid off another of length vt that represents the position of O relative to him---in his own frame. Let's also say that O' hs laid off the rods x' and vt' in his own frame to represent these same lengths.

Now the convential derivation seems to run like this. Letting $\gamma = \dfrac{1}{\sqrt{1-\left(v^2/c^2\right)}}$, O perceives that $x = \dfrac{1}{\gamma}x' + vt$. Solving for x' gives $x' = \gamma\left(x - vt\right)$. My question is this: couldn't we equally well say that $x' = \dfrac{1}{\gamma}\left(x - vt\right)$? The rational here is that observer O could just as well have laid off a rod of length x-vt in his frame and this *distance* would be modified by the length contraction factor $1/\gamma$ as perceived by O'.

In fact, the "correct" derivation first given above seems to give fallacious results if we substitute t = 0 because this says that $x' = \gamma x$ at that instant---which flies in the fact of length contraction. It seems to say that a length is dilated like a time interval.

I think the key issue that is befogging my mind is this. If there is a rod in the unprimed system of length L, then O' will perceive its length to be $L' = \dfrac{1}{\gamma}L$. Solving this gives $L = \gamma L'$. However, if O' has *laid off* a distance on his axis of L', then O should actually measure it to be $L = \dfrac{1}{\gamma}L'$, shouldn't he? The issue here seems to be whether or not the observer actually marks off a distance equal to the length he has measured.

I'm sure I am confused on this issue, but I really am unable to see the difference between the two approaches. Can you help?

Thanks a lot.

Art Davis